This listing of claims replaces all previous versions or listings of claims previously presented.

Listing of Claims

1. (Previously presented) A method of fabricating a laser, said method comprising the steps of:

(a) depositing a photoresist on epitaxially grown layers;

(b) patterning said photoresist to form an aperture area;

(c) depositing a dielectric material on said patterned photoresist;

(d) depositing a liftoff layer on said dielectric material;

(e) removing portions of said dielectric material and liftoff layer that border said aperture area;

(f) implanting regions of the epitaxially grown layers bordering said aperture area, wherein said remaining portion of said dielectric material and said liftoff layer serve as an implantation guide; and

(g) depositing a metal layer on said dielectric material.

2. (Original) The method of claim 1, wherein said epitaxially grown layers comprise a bottom semiconductor Distributed Bragg Reflector stack, an active region and a top semiconductor Distributed Bragg Reflector stack.

3. (Original) The method of claim 2, wherein said top semiconductor Distributed Bragg Reflector stack contains material chosen from the group consisting of aluminum, gallium, arsenic, indium, phosphorus and combinations thereof.

4. (Previously presented) The method of claim 3, wherein said top semiconductor Distributed Bragg Reflector stack comprises alternating layers of aluminum gallium arsenide, and aluminum arsenide.

5. (Original) The method of claim 4, wherein said top semiconductor Distributed Bragg Reflector stack is doped.

6. (Original) The method of claim 2, wherein said top semiconductor Distributed Bragg Reflector stack has forty individual layers or less.

7. (Original) The method of claim 6, wherein said top semiconductor Distributed Bragg Reflector stack has twenty individual layers or less.

8. (Original) The method of claim 7, wherein said top semiconductor Distributed Bragg Reflector stack has eleven individual layers or less.

9. (Original) The method of claim 8, wherein said top semiconductor Distributed Bragg Reflector stack has seven individual layers or less.

10. (Original) The method of claim 1, wherein said dielectric material is chosen from the group consisting of silicon dioxide, titanium dioxide, silicon nitride, and combinations thereof.

11. (Original) The method of claim 10, wherein said dielectric material is chosen from the group consisting of silicon dioxide, titanium dioxide, and combinations thereof.

12. (Original) The method of claim 11, wherein said dielectric material is silicon dioxide.

13. (Previously presented) The method of claim 1, wherein said laser is a vertical cavity surface emitting laser.

14. (Original) A laser resulting from the method of claim 1.

15. (Previously presented) A laser comprising:

a substrate;

a laser area comprising a bottom semiconductor DBR stack, an active region, and a partial top semiconductor DBR stack positioned upon said substrate;

a dielectric mirror forming an aperture area and being positioned upon said partial top semiconductor DBR stack; and

an implanted region configured around said aperture area but not penetrating said aperture area.

16. Cancelled

17. (Previously presented) The laser of claim 15, wherein said top semiconductor Distributed Bragg Reflector stack contains material chosen from the group consisting of aluminum, gallium, arsenic, indium, phosphorus and combinations thereof.

18. (Previously presented) The laser of claim 17, wherein said top semiconductor Distributed Bragg Reflector stack has alternating layers of aluminum gallium arsenide and aluminum arsenide.

19. (Previously presented) The laser of claim 15, wherein said top semiconductor Distributed Bragg Reflector stack is doped.

20. (Previously presented) The laser of claim 15, wherein said top semiconductor Distributed Bragg Reflector stack has forty individual layers or less.

21. (Original) The laser of claim 20 wherein said top semiconductor Distributed Bragg Reflector stack has twenty individual layers or less.

22. (Original) The laser of claim 21, wherein said top semiconductor Distributed Bragg Reflector stack has eleven individual layers or less.

23. (Original) The laser of claim 22, wherein said top semiconductor Distributed Bragg Reflector stack has seven individual layers or less.

24. (Original) The laser of claim 15. wherein said dielectric mirror contains material chosen from the group consisting of silicon dioxide, titanium dioxide, silicon nitride, and combinations thereof.

25. (Original) The laser of claim 24, wherein said dielectric mirror contains material chosen from the group consisting of silicon dioxide, titanium dioxide, and combinations thereof.

26. (Original) The laser of claim 25, wherein said dielectric mirror comprises silicon dioxide.

27. (Original) The laser of claim 15, wherein said device is a vertical cavity surface emitting laser.

28. (Previously presented) A vertical cavity surface emitting laser comprising:

a substrate;

a bottom semiconductor Distributed Bragg Reflector stack;

an active region comprising an aperture where light is emitted;

a top semiconductor Distributed Bragg Reflector stack; and

a dielectric mirror positioned directly on said top semiconductor Distributed Bragg Reflector stack over said aperture of said active region

wherein said bottom semiconductor Distributed Bragg Reflector stack and said top semiconductor Distributed Bragg Reflector stack comprise epitaxial layers and said bottom semiconductor Distributed Bragg Reflector stack comprises more epitaxial layers than said top semiconductor Distributed Bragg Reflector stack.

29. (Original) The vertical cavity surface emitting laser of claim 28, wherein the number of epitaxial layers comprising top semiconductor Distributed Bragg Reflector stack is less than 5% of the number of epitaxial layers comprising bottom semiconductor Distributed Bragg Reflector stack.

30. (Original) The vertical cavity surface emitting laser of claim 29, wherein said number of epitaxial layers in said top semiconductor Distributed Bragg Reflector stack is about four.

31. (Original) The vertical cavity surface emitting laser of claim 28, wherein said bottom semiconductor Distributed Bragg Reflector stack and said top semiconductor Distributed Bragg Reflector stack have certain reflectivities and said reflectivity of said bottom Distributed

Bragg Reflector stack is higher than said reflectivity of said top Distributed Bragg Reflector stack.

32. (Currently amended) A vertical cavity surface emitting laser comprising:

a substrate;

a bottom semiconductor Distributed Bragg Reflector stack;

an active region comprising an aperture area where light is emitted;

a top semiconductor Distributed Bragg Reflector stack;

an implanted region within said <u>epitaxial layers</u> ~~substrate~~, said implanted region configured around said aperture area but not penetrating said aperture area; and

a dielectric mirror positioned directly on said top semiconductor Distributed Bragg Reflector stack over said aperture area of said active region, said dielectric mirror functioning as a guide to form said implanted region,

wherein said bottom semiconductor Distributed Bragg Reflector stack and said top semiconductor Distributed Bragg Reflector stack comprise epitaxial layers and said bottom semiconductor Distributed Bragg Reflector stack comprises more epitaxial layers than said top semiconductor Distributed Bragg Reflector stack.

33. (Currently amended) A laser comprising:

a substrate:

~~a laser area comprising~~ a bottom semiconductor DBR stack[[,]];

an active region <u>positioned upon said bottom semiconductor DBR stack</u>[[,]]; ~~and~~

a partial top semiconductor DBR stack positioned upon said <u>active region</u> ~~substrate~~;

a dielectric mirror forming an aperture area and being positioned upon said partial top semiconductor DBR stack; and

an implanted region configured around said aperture area but not penetrating said aperture area, wherein said aperture area has a width of about 2 to 25 μm.

34. (Previously presented) The laser of claim 33, wherein said aperture area has a width of about 5 to 15 μm.

35. (Previously presented) The laser of claim 33, wherein said aperture area has a width of about 10 μm.

36. (Previously presented) The laser of claim 33, wherein said top semiconductor Distributed Bragg Reflector stack contains material chosen from the group consisting of aluminum, gallium, arsenic, indium, phosphorus and combinations thereof.

37. (Previously presented) The laser of claim 36, wherein said top semiconductor Distributed Bragg Reflector stack has alternating layers of aluminum gallium arsenide and aluminum arsenide.

38. (Previously presented) The laser of claim 33, wherein said top semiconductor Distributed Bragg Reflector stack is doped.

39. (Previously presented) The laser of claim 33, wherein said top semiconductor Distributed Bragg Reflector stack has forty individual layers or less.

40. (Previously presented) The laser of claim 39 wherein said top semiconductor Distributed Bragg Reflector stack has twenty individual layers or less.

41. (Previously presented) The laser of claim 40, wherein said top semiconductor Distributed Bragg Reflector stack has eleven individual layers or less.

42. (Previously presented) The laser of claim 41, wherein said top semiconductor Distributed Bragg Reflector stack has seven individual layers or less.

43. (Previously presented) The laser of claim 33, wherein said dielectric mirror contains material chosen from the group consisting of silicon dioxide, titanium dioxide, silicon nitride, and combinations thereof.

44. (Previously presented) The laser of claim 43, wherein said dielectric mirror contains material chosen from the group consisting of silicon dioxide, titanium dioxide, and combinations thereof.

45. (Previously presented) The laser of claim 44, wherein said dielectric mirror comprises silicon dioxide.

46. (Previously presented) The laser of claim 33, wherein said device is a vertical cavity surface emitting laser.